

REMARKS

I. Rejection of Claims 1-23 Under 35 U.S.C. § 112, ¶ 2

The Office Action states that claims 1-23 stand rejected under 35 U.S.C. § 112, ¶ 2, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Office Action states that the phrase “the functional units are completed directly without interruption in a continuous flow” is not clear. See Page 2 of the Office Action. The Office Action states that “it is not clear what the meaning of ‘completed directly’ is.” See Page 2 of the Office Action.

Applicant’s claimed invention relates to the production line for the production of cast parts. See Application as Originally Filed (“Original Application”) at Abstract. The cast parts are produced, in part, using casting moulds and castings. See e.g., Original Application at Abstract; Page 5, lines 12-13; Page 9, lines 21-23. As noted in Applicant’s Amendment and Response previously filed on December 11, 2008, the Original Application teaches that:

[t]he individual working stations are completed directly one after the other in the process. The term “directly” is not taken to mean the shortest spatial distance in this connection, rather according to the invention it is essential that the individual functional units are passed through one after the other without interruption. A production sequence takes place in which the individual working steps are directly linked together. Casting moulds and castings are conveyed through the production line in a continuous flow. See, e.g., Original Application at page 5, ¶ 2 (emphasis added).

Therefore, the term “completed directly” means that the individual working steps of the functional units are directly linked together such that the steps are completed one after the other without interruption. Since the functional units are completed directly without interruption in a continuous flow, the casting moulds and castings are conveyed through the production line in a continuous flow. As the definition of “completed directly” is provided by the specification of the Original Application, Applicant respectfully requests reconsideration and withdrawal of the rejection to the claims under 35 U.S.C. § 112, ¶ 2.

II. Rejection of Claims 1-23 Under 35 U.S.C. § 112, ¶ 1

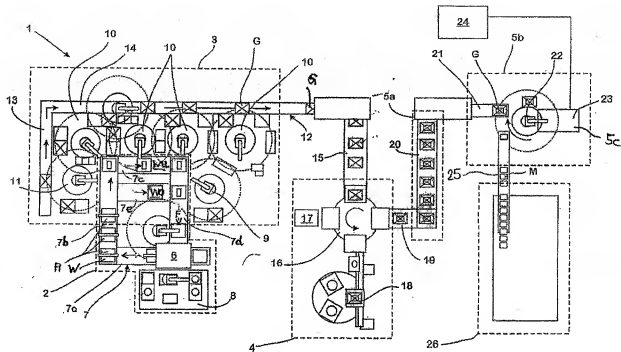
The Office Action states that Claims 1-23 stand rejected under 35 U.S.C. § 112, ¶ 1, because the “specification does not reasonably provide enablement for the cycle time of the finished cast part to be determined by the cycle time of core production.” See Page 2 of the Office Action. Applicant respectfully disagrees.

Applicant’s claimed invention recites, in part, that a first cycle time with which the finished cast parts are output is determined by a second cycle time with which the casting cores are produced. Applicant’s claimed invention also recites, in part, that the functional units are completed directly without interruption in a continuous flow.

A. To Achieve Continuous Flow, A First Cycle Time With Which The Finished Cast Parts Are Output Is Determined By A Second Cycle Time With Which The Casting Cores Are Produced

The Office Action states that “as shown in the figure, there is a space between the adjacent molds carried by the conveyer 13. Thus, the speed of conveyor 13 may be varied without interrupting the constant production rate of core production unit 2.” See Office Action at Page 2. The Office Action concludes that “the first cycle time with which the finished cast parts are output is not necessary [sic] to be determined by the second cycle time with which the casting cores are produced.” See Office Action at Page 3.

The Office Action indicates that the instant speed of subsequent conveyers and the casting rate of the subsequent units can be varied without affecting the core production rate in the core production unit 2. See Office Action at Page 2-3. Applicant’s claimed invention does not recite varying the cycle time of subsequent functional units to vary the cycle time of the core production unit 2. Instead, Applicant respectfully submits that the cycle time of subsequent functional units (e.g., mould assembly unit 3, casting unit 4, cooling unit 5a, demoulding unit 5b, and quenching unit 5c) must be determined by the cycle time of the core production unit 2 to achieve a continuous flow between the functional units (see the sole figure from the application reproduced below).



Varying the cycle time of subsequent function units (e.g., by varying the instant speed of subsequent conveyers and the casting rate of the subsequent units) would not necessarily vary the cycle time of the core production unit 2. However, merely varying the cycle time of the subsequent functional units without taking into account the cycle time of the core production unit 2 could result in the interruption or accumulation of units (e.g., casting cores) along the production line. Therefore, to prevent interruption or accumulation of units along the production line and to achieve continuous flow between the functional units, the cycle time with which the finished cast parts are output is determined by a second cycle time with which the casting cores are produced.

Furthermore, Applicant respectfully submit that the “space between the adjacent molds,” as shown in the figure, is one embodiment of how the functional units should be connected so that individual functional units are passed through one after the other without interruption to enable a continuous flow of the production line. The fact the casting moulds G are conveyed on different conveying belts with different conveying speeds is shown in the figure. The casting

moulds G leave the core production unit placed on section 14 of the first conveying belt in a greater distance than on section 15 of this conveying belt, which conveys the moulds G to the casting unit 4. The distance between the moulds G which leave the casting unit 4 on section 20 of the conveying belts is lower than the distance between the moulds G on section 15. The reason for the different distances between the casting moulds G on the sections 14, 15 and 20 of the conveying belt is that the length of these sections 14, 15 and 20 is different as well. Accordingly, to enable a continuous work flow the speed with which the sections 14, 15 and 20 of the conveying belt run must be adapted to the length of the respective section, the number of moulds, and the cycle time provided by the core production unit.

B. Enablement Does Not Require Disclose Of Subject Matter Well Known In the Art

The Office Action states that “it is not clear how or in what manner units 2-6 are linked directly such that the rate of operation of the immediate downstream unit is determined by the rate of operation of the immediate upstream unit, i.e. how or in what manner the conveyor 14 is linked to conveyor 15, conveyor 15 to rotary table 16...” See Page 3 of the Office Action.

“The Law does not require the applicant to describe every conceivable embodiment of an invention.” Penda Corporation v. United States, 29 Fed. Cl. 533, 556 (Fed. Cl. 1993). Furthermore, “[t]he patent need not teach, and preferably omits, that which is well known in the art.” See id.; see e.g., Falko-Gunter Falkner v. Inglis, 448 F.3d 1357, 1365 (Fed. Cir. 2006). Specifically, the mechanical arts have been characterized “as an art where the results are predictable” in contrast with the chemical arts. See Penda Corporation at 556 (Fed. Cl. 1993); see e.g., MPEP § 2164.03.

The Office Action states that Applicant’s claimed invention is not enabled since it is not described how the conveyers are linked directly to one another. As an initial matter, Applicant respectfully submits that the claimed invention does not necessitate such a rigid coupling of the conveyers via a central common drive. While it is possible to link the conveyers by a central common drive, such that, for example, conveyers 13, 14, 15, 19, and 20 are coupled via a mechanical or hydraulic speed transformation; it is also possible to use modern drive controls,

for example, electrical drives for the respective section of the conveying belts and a control unit controlling the drive speed of the respective drives, which can include a driving belt drive as a standard feature (e.g., decentralised controlled drives). For example, conveyers 13, 14, 15, 19, and 20 can be run at different speeds. The Original Application teaches that:

Intermediate stores or other storage devices, as are still unavoidable in the prior art, do not exist in a production line according to the invention. To achieve this, in a production line according to the invention the conveyor section, via which firstly the casting cores and then the casting moulds are conveyed, can obviously be guided such that an optimal working sequence is ensured irrespective of whether the respective parts are transported via the shortest distance to the respective next working station. See Page 5, lines 15-20 of the Original Application.

Therefore, the functional units of the inventive production line can be placed such that an optimised production flow is achieved with respect to the time needed for the functional units (e.g., the production of the cores, the drying and hardening of the cores, the assembly of the cores to a core package which forms the respective casting mould, the casting of the metal, the solidification of the melt etc.)

Applicant respectfully submits that the manner in which the conveyers are connected, for example, either through the use of mechanical speed transformation, hydraulic speed transformation or modern drive controls, are well known to those skilled in the arts. Applicant's claimed invention is, in part, the discovery that a first cycle time with which the finished cast parts are output must be determined by a second cycle time with which the casting cores are produced to achieve continuous flow without interruption between the functional units. Applicant respectfully submits that due to the predictable nature of the mechanical arts, one skilled in the art would be able to utilize the tools well known to those in the art (e.g., mechanical speed transformation, hydraulic speed transformation, or modern drive controls) to practice the invention without undue experimentation.

For the reasons stated above, Applicant respectfully requests reconsideration and withdrawal of the rejection to the claims under 35 U.S.C. § 112, ¶ 1.

CONCLUSION

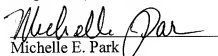
Applicant's discussion of particular positions of the Examiner does not constitute a concession with respect to any positions that are not expressly contested by the Applicant. Applicant's emphasis of particular reasons why the claims are patentable does not imply that there are not other sufficient reasons why the claims are patentable nor does it imply the claims were not allowable in their unamended form.

In view of the foregoing remarks, all claims are submitted to be in a condition for allowance, and notice thereof is respectfully requested. If the Examiner feels that a telephone conference would expedite the prosecution of this case, the Examiner is invited to call the undersigned.

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Respectfully submitted,



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